

Claims

1. A circuit breaker comprising an electronic tripping device and a bypass circuit, whereby
 - current detectors (8) deliver test signals (U_i) of the current to be monitored via the main contactors (2) of the circuit breaker as well as the supply energy for the electronic tripping device (20) and for the bypass circuit (40),
 - the microprocessor-controlled tripping device (20) processes the test signals (U_i) and activates a tripping coil (14) that automatically opens the main contactor (2) when settable limit values are exceeded, and
 - the bypass circuit (40) encompasses a high pass filter (41) that is located downstream from a watchdog circuit (26) that serves to monitor the microprocessor (24), a first semiconductor switch (48) located downstream from said high pass filter (41), a charging capacitor (46) that can be discharged via said first semiconductor switch (48) and a voltage comparator (45),
 characterized in that
 - the comparator (45) is operationally connected via its first input to the current detectors (8) and, on the output side, to the charging capacitor (46),
 - a monitoring circuit (44) applies a first or a second reference voltage (U_{r1} ; U_{r2}) to the second input of the comparator (45) when the supply voltage (U_{cc}) exceeds or falls below a pre-defined threshold level, whereby the first reference voltage (U_{r1}) is associated with a first current limit value and the second reference voltage (U_{r2}) is associated with a second current limit value that is smaller than the first current limit value, and
 - an actuation circuit (9) leading, on the output side, to the tripping coil (14) can be actuated by a first OR-input of the electronic tripping device (20) and via a second OR-input of the charging capacitor (46) as a function of its state of charge.

2. The circuit breaker according to the preceding claim, characterized in that the first reference voltage (U_{r1}) corresponds to the maximum settable limit value for the tripping current.
3. The circuit breaker according to the one of the preceding claims, characterized in that the first or the second reference voltage (U_{r1} , U_{r2}) is applied via the monitoring circuit (44) to the second input of the comparator (45) before or after the lapsing of a threshold time calculated from the point when the circuit breaker was switched on, at which time the threshold level of the supply voltage (U_{cc}) is exceeded.
4. The circuit breaker according to the one of the preceding claims, characterized in that a first pulse shaper stage (42) is arranged between the high pass filter (41) and the first semiconductor switch (48).
5. The circuit breaker according to the one of the preceding claims, characterized in that a second pulse shaper stage (43) is arranged between the charging capacitor (46) and the actuation circuit (9).
6. The circuit breaker according to the one of the preceding claims, characterized in that the first and the second reference voltages (U_{r1} ; U_{r2}) are fed to the comparator (45) via an electronic change-over switch (47) that can be switched over by the monitoring circuit (44).

7. The circuit breaker according to the one of the preceding claims, characterized by means (49) that can be controlled by the monitoring circuit (44) and that suppress the watchdog pulses when the value falls below the threshold value of the supply voltage (U_{cc}).
8. The circuit breaker according to the one of the preceding claims, characterized by means (49) to suppress the watchdog pulses for testing purposes.
9. The circuit breaker according to one of the two preceding claims, characterized in that a second semiconductor switch (49) leads on the output side to the high pass filter (41).